(23)

FILED

JAN 19 1993

OFFICE OF THE CLERK

No. 92-102

In The Supreme Court of the United States

OCTOBER TERM, 1992

WILLIAM DAUBERT AND JASON DAUBERT, Individually And As Guardians Ad Litem For JASON DAUBERT, And ANNA DE YOUNG, Individually And As Guardian Ad Litem For ERIC SCHULLER,

Petitioners,

v.

MERRELL DOW PHARMACEUTICALS, INC.,

Respondent.

On Writ of Certiorari To The United States Court of Appeals For the Ninth Circuit

---

BRIEF AMICUS CURIAE OF AMERICAN INSURANCE ASSOCIATION IN SUPPORT OF RESPONDENT

[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible] INSURANCE ASSOCIATION
[illegible] Connecticut Avenue, N.W.
[illegible], D.C. 20[illegible]
([illegible]) [illegible]-7100

WILLIAM J. KILBERG*
PAUL BLANKENSTEIN
BRADFORD R. CLARK
JOHN E. GERDING
GIBSON, DUNN & CRUTCHER
1050 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) [illegible]-[illegible]

Attorneys for American Insurance Association as Amicus Curiae

*Counsel of Record

PRINTED BY STUART S. ADAMS, WASHINGTON, D.C. (202) 347-[illegible]

BEST AVAILABLE COPY

TABLE OF CONTENTS

	Page(s)
INTEREST OF *AMICUS CURIAE*	1
SUMMARY OF ARGUMENT	2
ARGUMENT	3
I. THE FEDERAL RULES OF EVIDENCE REQUIRE THE EXCLUSION OF TESTIMONY BASED ON PROPOSITIONS NOT ACCEPTED IN THE SCIENTIFIC COMMUNITY	3
A. The Language of Rule 702 Imposes A Screening Mechanism	5
B. The Structure of the Federal Rules Confirm that Rule 702 Requires A Screening Mechanism	8
1. Rule 702 Must be Read *In Pari Materia* with Rules 803(18) and 201	10
2. Rule 702 Must be Read *In Pari Materia* with Rule 703	14
C. The Common Law Background Supports Respondent's Interpretation of Rule 702	17
II. RULE 702 REQUIRES SCREENING OF UNDERLYING SCIENTIFIC PROPOSITIONS RATHER THAN SCREENING OF CONCLUSIONS DERIVED FROM THE APPLICATION OF THOSE PROPOSITIONS	19
A. The Ninth Circuit Correctly Applied a Bright-Line Rule in the Case Below	20
B. Other Courts Have Applied a Bright-Line Rule Under Rule 702	21
III. FAILURE TO APPLY RULE 702's SCREENING REQUIREMENT THREATENS TO UNDERMINE THE INSURANCE MECHANISM	24

A. Abandonment of Rule 702's Screening Mechanism Would Result in Unanticipated Losses which Could Adversely Affect Insurers' Financial Condition 24

B. The Interplay Between a Lenient Threshold for the Admissibility of "Scientific" Testimony and Toxic Tort Damage Theories Could Overwhelm the Insurance Mechanism 26

CONCLUSION 29

TABLE OF AUTHORITIES

Cases: Page

In Re Agent Orange Prod. Liab. Litig., 611 F. Supp. 1223 (E.D.N.Y. 1985), *aff'd*, 818 F.2d 187 (2d Cir. 1987), *cert. denied*, 487 U.S. 1234 (1988) 22

Amaya v. Home Ice, Fuel & Supply Co., 59 Cal. 2d 295 (1963) 28

Barefoot v. Estelle, 463 U.S. 880 (1983) 13,16,17

Borer v. American Airlines, Inc., 19 Cal. 3d 441 (1977) 28

Bourjaily v. United States, 483 U.S. 171 (1987) ... 4,12

Canon Reliance Coal Co. v. Industrial Comm'n, 211 P. 868 (Colo. 1922) 25

Dartez v. Fibreboard Corp., 765 F.2d 456 (5th Cir. 1985) 25

Daubert v. Merrell Dow Pharmaceuticals, Inc., 951 F.2d 1128 (9th Cir. 1991) 20

Frye v. United States, 293 F. 1013 (D.C. Cir. 1923) 3,18,23

New Castle County v. Hartford Accident & Indemnity Co., 970 F.2d 1267 (3d Cir. 1992) 27

In re Paoli R.R. Yard PCB Litig., 916 F.2d 829 (3d Cir. 1990), *cert. denied*, 111 S. Ct. 1584 (1991) 27

Pennsylvania Thresherman & Farmers Mut. Cas, Ins. Co. v. Messenger, 181 Md. 295, 29 A.2d 653 (1943) 5

Piquett v. United States, 81 F.2d 75 (7th Cir.), *cert. denied*, 298 U.S. 664 (1936) 7

Spring Co. v. Edgar, 99 U.S. 645 (1879) 17

Tonkovich v. Department of Labor & Industries of State, 195 P.2d 638 (Wash. 1948) 25

United States v. Abel, 469 U.S. 45 (1984) 13,17,18,19

United States v. Brown, 557 F.2d 541 (6th Cir. 1977) 21

Table of Authorities Continued

Page

United States v. Jakobetz, 955 F.2d 786 (2d Cir.) *cert. denied*, 113 S. Ct. 104 (1992) 23

United States v. Kozminski, 821 F.2d 1186 (6th Cir. 1987) (*en banc*) 21

United States v. Two Bulls, 918 F.2d 56 (8th Cir. 1990) 23

Statutes and Rules:

Fed. R. Evid. 201 10,11,12,13,16

Fed. R. Evid. 402 9

Fed. R. Evid. 602 4,5,9

Fed. R. Evid. 702 ..... *passim*

Fed. R. Evid. 703 ..... *passim*

Fed. R. Evid. 704 15,16

Fed. R. Evid. 705 15,16

Fed. R. Evid. 802 4,9

Fed. R. Evid. 803(18) 10,11,12,13,16

Fed. R. Evid. 803(24) 14

Fed. R. Evid. 804(b)(5) 14

Fed. R. Evid. 201 advisory committee's notes 11,12

Fed. R. Evid. 408 advisory committee's notes 19

Fed. R. Evid. 601 advisory committee's notes 19

Fed. R. Evid. 602 advisory committee's notes 12

Fed. R. Evid. 702 advisory committee's notes 10,14,15,16

Fed. R. Evid. 703 advisory committee's notes 4

Fed. R. Evid. 803(18) advisory committee's notes 11

Fed. R. Evid. Article VIII advisory committee's notes 12,14

Miscellaneous:

Edward W. Cleary, *Preliminary Notes on Reading the Rules of Evidence*, 57 Neb. L. Rev. 908 (1978) 13,18

Table of Authorities Continued

Page

Michael Dore, *A Commentary on the Use of Epidemiological Evidence in Demonstrating Cause-in-Fact*, 7 Harv. Envtl. L. Rev. 429 (1983) ... 20

Donald Elliott, *Toward Incentive-Based Procedure: Three Approaches for Regulating Scientific Evidence*, 69 B.U. L.Rev. 487 (1989) 9,25

Samuel Glasstone, *Sourcebook on Atomic Energy* (3d ed. 1979) 8

Fowler V. Harper, Fleming James, Oscar S. Gray, 4 *The Law of Torts* § 25.18C (1986) 28

1 *Harrison's Principles of Internal Medicine*, 642 (12th ed. 1991) 22

Robert B. Holtom, *Underwriting: Principles & Practices* 235 (3d ed. 1987) 24

Liability: Perspectives and Policy, 1-16 (R. Litan & C. Winston ed., 1988) 25

Roland H. Long, 1 *The Law of Liability Insurance* §§ 1.01[1], 1.03[4] (1992) 24

Maguire, *Evidence: Common Sense and Common Law* (1947) 14

Andrew J. Pollack, *Cold Fusion, Derided in U.S., Is Hot in Japan*, N.Y. Times, Nov. 17, 1992, at C1 8

U.S. Dep't of Justice, Tort Policy Working Group, *An Update on the Liability Crisis* (1987) 26

Webster's Third New International Dictionary (1976) 6,7

M. Russell Wehr *et al.*, *Physics of the Atom* (4th ed. 1984) 8

2 J. Wigmore, *Evidence in Trials at Common Law*, § 665b (J. Chadbourn ed. 1979) 5

7 J. Wigmore, *Evidence in Trials at Common Law*, § 1917 (J. Chadbourn ed. 1978) 5

Willmore, *In Fear of Cancerphobia*, 3 Toxics L. Rep. (BNA) 559 (Sept. 28, 1988) 28

INTEREST OF *AMICUS CURIAE*

Amicus curiae, the American Insurance Association ("AIA"), is a national trade organization representing over 250 companies writing property and casualty insurance contracts in every state and jurisdiction of the United States. These companies together wrote policies involving nearly $60 billion in premiums in 1991. AIA member companies are affiliated with thousands of independent insurance agents nationwide. A substantial portion of AIA member companies' business is commercial liability insurance. This form of insurance coverage facilitates the ability of American businesses to provide the goods, services, jobs and investments vital to the country's economic health. In addition, AIA member companies employ more than 145,000 people and contribute $2.2 billion in state taxes and fees (including payroll taxes) to state governments each year.

AIA's purposes include promoting the economic, legislative and public interests of its members and of the insurance industry as a whole; providing a forum for discussion of problems which are of common concern to its members; and serving the public interest through appropriate activities including the promotion of safety and security of persons and property.

AIA members have issued, and continue to issue, insurance policies based upon estimates of risk that take into account the state of scientific knowledge. Whether the Federal Rules of Evidence authorize the courts to exclude expert testimony that is not based upon accepted scientific knowledge is, correspondingly, of great significance to the insurance industry. The free admission of such testimony not only would increase losses under existing policies, but would also result in greater uncertainty in the underwriting of future risks. This increased uncertainty could cause both an increase in the cost of insurance and a decrease in its availability.[1]

---

[1] Counsel to the parties have consented to the filing of this brief. Letters of consent have been filed with the Clerk.

SUMMARY OF ARGUMENT

Rule 702 provides that if "scientific . . . knowledge" will assist the trier of fact, an expert may testify "thereto."[2] The language selected by the drafters underscores that the Rule authorizes testimony based only upon propositions that constitute "scientific . . . knowledge," not "scientific" speculation or conjecture. A proposition is not properly characterized as "scientific . . . knowledge" unless it is generally accepted within the scientific community. Thus, contrary to petitioners' position, the Federal Rules of Evidence exclude testimony based upon such unscientific disciplines as astrology, while permitting testimony based upon accepted scientific principles such as the law of gravity, even if the expert's case-specific opinions and conclusions based on such principles are not themselves generally accepted within the scientific community.

This reading of Rule 702 is confirmed by the structure of the Rules as well as by the common law principles that give content and context to what the drafters sought to achieve by the adoption of the Rules. Rule 702 sets forth an exception to the general rules of exclusion contained in Rules 602 and 802, which prohibit the introduction of testimony not based on personal knowledge and on hearsay. Expert testimony is an exception to the general rules that a witness' testimony must be based on personal knowledge and may not constitute hearsay. An expert witness testifying as to "scientific . . . knowledge" is expressing the accumulated learning and collective views of the relevant scientific discipline. Like other exceptions to these general rules of exclusion, Rule 702 requires an alternative showing of reliability before an exception will be granted admitting expert scientific testimony. This alternative showing is general acceptance within the scientific community of the scientific propositions and methodologies upon which the expert bases his testimony. Only then can

[2] For the convenience of the Court, we have set out relevant provisions of the Federal Rules of Evidence as an appendix to this brief.

the expert be said to be testifying to "scientific . . . knowledge," or basing his opinion thereon.

Moreover, Rule 702's focus on "scientific . . . knowledge" incorporates the common law approach to admission of scientific testimony reflected in *Frye v. United States*, 293 F. 1013, 1014 (D.C. Cir. 1923), and its progeny. The widespread judicial use of a general acceptance test prior to the adoption of the Federal Rules of Evidence provides further support for the proposition that Rule 702's use of the language "scientific . . . knowledge" necessitates continued use of such a test.

Failure effectively to enforce Rule 702's screening mechanism would adversely affect not only parties to federal litigation, but also the insurance industry as a whole. Abandonment of a screening mechanism for scientific testimony would expose the insurance industry to substantial, unexpected, and unfunded liability. If insurers are repeatedly subjected to liability for risks they did not assume, their inability to recoup the losses associated with this liability poses at least a potential threat to the financial health and stability of the insurance industry. Moreover, the absence of any threshold screening mechanism, when combined with more lenient, emerging damage theories, could overwhelm the insurance mechanism by rendering insurers unable to predict risks with necessary certainty.

ARGUMENT

I. THE FEDERAL RULES OF EVIDENCE REQUIRE THE EXCLUSION OF TESTIMONY BASED ON PROPOSITIONS NOT ACCEPTED IN THE SCIENTIFIC COMMUNITY

Petitioners devote a considerable portion of their brief to refuting the "contention that *Frye* survives as a judge-made rule for excluding evidence, merely because it existed for half a century prior to enactment of the Rules." Brief for Petitioners ("Pet. Br.") at 19-26. Specifically, petitioners argue that Rule 402—which declares that "all relevant evidence is admissible except as otherwise pro-

vided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority"—" 'wiped the slate clean' " and does not permit the adoption of "judge-made rules." *Id.* at 14.

This argument is a straw man. The question before the Court is not whether petitioners' expert testimony should be excluded by virtue of a "judge-made rule" that "stands independent of the Federal Rules." *Id.* at 18. Rather, the question before the Court is whether the Rules continue the common law practice—in "exist[ence] for half a century prior to enactment of the Rules"—of excluding scientific testimony that is not based on a scientific theory or methodology generally accepted within the scientific community. The short answer is that both the language and the structure of the Rules compel the conclusion that the Rules continue this practice.[3]

The general rule under the Federal Rules of Evidence is that "[a] witness may not testify to a matter unless . . . the witness has personal knowledge of the matter." Fed. R. Evid. 602. In addition, as a general matter, "[h]earsay is not admissible except as provided by these rules." Fed. R. Evid. 802. Article VII of the Rules, governing the admissibility of opinions and expert testimony, authorizes an important exception to these general rules for certain types of testimony by experts.[4] Absent Article VII, much of an

[3] Thus, petitioners' substantial reliance on *Bourjaily v. United States*, 483 U.S. 171 (1987), is misplaced. Petitioners rely on *Bourjaily* for the proposition that "this Court has refused to depart from the plain meaning of the Rules as a means of preserving pre-1975 common-law doctrines inconsistent with language in the Rules." Pet. Br. at 21. In this case, the Court need not "depart from the plain meaning of the Rules," but rather need only interpret the Rules as written. As shown below, it is petitioners' interpretation—that the Federal Rules of Evidence contain no standard for determining what constitutes "scientific . . . knowledge"—that is inconsistent with the language of the Rules.

[4] *See* Fed. R. Evid. 703 advisory committee's notes ("If it be feared that the enlargement of permissible data may tend to break down *the rules of exclusion* unduly, notice should be taken that the rule requires

expert's testimony would be inadmissible for lack of personal knowledge[5] or as hearsay.[6]

A. The Language of Rule 702 Imposes A Screening Mechanism

Rule 702, entitled "Testimony by Experts," sets forth the general exception to the personal knowledge and hearsay rules, authorizing "a witness qualified as an expert" to testify to "scientific, technical, or other specialized knowledge . . . in the form of an opinion or otherwise." Fed. R. Evid. 702. Before an expert will be permitted to testify to such "knowledge," however, Rule 702 requires that the proponent of the testimony establish the proper foundation for such testimony. Rule 702 provides in full:

that the facts or data 'be of a type reasonably relied upon by experts in the particular field.' ") (emphasis added).

[5] At common law, "the original and orthodox objection to 'mere opinion' was that it was the guess of a person who had no personal knowledge, and the 'mere opinion' of an expert was admitted as a necessary exception." 7 J. Wigmore, *Evidence in Trials at Common Law* § 1917, at 10 (J. Chadbourn ed. 1978). Indeed, Rule 602 itself confirms that the admissibility of expert testimony depends upon an exception to the general rule requiring personal knowledge. Rule 602 expressly states that "[t]his rule is subject to the provisions of rule 703, relating to opinion testimony by expert witnesses." Fed. R. Evid. 602.

[6] Although the rule against hearsay precludes a layman from testifying to "a fact which he has learned only by reading a medical or a mathematical book," an exception is made for "a professional physician or mathematician" testifying to such facts because an expert's reliance upon knowledge gained from such sources accords with "the accepted methods of professional work." 2 J. Wigmore, *Evidence in Trials at Common Law* § 665b, at 919 (J. Chadbourn ed. 1979); *see Pennsylvania Threshermen & Farmers Mut. Cas. Ins. Co. v. Messenger*, 181 Md. 295, 298, 29 A.2d 653, 655 (1943) (rejecting hearsay objection to expert's testimony based on "standard books, maps of recognized authority, or any other reliable sources"). Although there might be no hearsay objection if an expert testified solely on the basis of knowledge gained from personal experience, "[t]he knowledge of an expert in any science or art would be extremely limited if it extended no further than inferences from happenings within his own experience." *Messenger*, 181 Md. at 298, 29 A.2d at 655.

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Fed. R. Evid. 702.

By its terms, Rule 702 thus requires the proponent of expert testimony to make at least three preliminary showings in order to establish the proper foundation. First, the proponent must establish that the expert will testify to "scientific, technical, or other specialized knowledge." Second, the proponent must demonstrate that such specialized knowledge "will assist the trier of fact to understand the evidence or to determine a fact in issue." Third, the proponent must establish that the witness is in fact "qualified as an expert by knowledge, skill, experience, training, or education" to testify to the specific body of knowledge relevant to the case.

The first of these preliminary showings bears most directly on the question presented in this case. Rule 702 refers to "scientific . . . knowledge," not to "scientific" speculation or conjecture. By employing this language, Rule 702 necessarily imposes some limits on the admissibility of expert testimony. Before admitting expert testimony, the trial court is required by Rule 702 to make a preliminary determination that the proposition to be espoused or applied by the expert does in fact constitute "scientific . . . knowledge." Of crucial importance, therefore, is what constitutes "scientific . . . knowledge."

According to one well-regarded dictionary, "KNOWLEDGE applies to any body of known facts or to any body of ideas inferred from such facts or accepted as truths on good grounds." *Webster's Third New International Dictionary* 1252 (1976). That Rule 702 refers to "*scientific* . . . knowledge" is especially significant, given that the question presented in this case focuses on the proper

standard for admitting *scientific* testimony. Webster's defines "scientific" as "concerned with or treating of science," *id.* at 2032, and, in turn, defines "science" as "accumulated and *accepted knowledge* that has been systematized and formulated with reference to the discovery of *general truths* or the operation of general laws." *Id.* (emphasis added). Similarly, under the entry for "knowledge," Webster's states that the term "SCIENCE still sometimes interchanges with KNOWLEDGE but commonly applies to a body of systematized knowledge comprising facts carefully gathered and *general truths* carefully inferred from them, often underlying a practice, usu[ally] connoting exactness, and often denoting knowledge of unquestionable certainty." *Id.* at 1252 (emphasis added).

Thus, the language of Rule 702 necessarily imposes some requirement that the scientific propositions upon which an expert bases his testimony must be accepted as valid in the scientific community before they properly may be the subject of such expert testimony. Not every proposition relating to a given phenomenon will qualify as "scientific . . . knowledge." A novel and unsubstantiated claim does not become "scientific . . . knowledge" simply because the claim has been made by an individual trained in science. Rather, such a claim will attain the designation "scientific . . . knowledge," if at all, only after it is widely disseminated, scrutinized by fellow scientists, and commonly recognized as valid.[7] Claims regarding nuclear fission and cold fusion illustrate this point. Although nuclear fission was novel and controversial when first posited, it is today generally accepted as valid and employed in reactors through-

---

[7] For example, whereas the proposition that each individual's fingerprints are unique qualifies as "scientific . . . knowledge," *see Piquett v. United States*, 81 F.2d 275 (7th Cir.), *cert. denied*, 298 U.S. 664 (1936), the proposition that the future may be predicted by astrology does not. *See Webster's Third New International Dictionary* 135 (1976) (defining "astrology" as "divination that treats of the supposed influences of the stars upon human affairs and of foretelling terrestrial events by their positions and aspects").

out the world.[8] Accordingly, propositions regarding nuclear fission are today properly referred to as "scientific . . . knowledge." Recent claims regarding cold fusion, by contrast, have not attained this status. Although widely disseminated and scrutinized, these claims have not been generally accepted as valid and hence are not properly described as "scientific . . . knowledge."[9]

Petitioners simply ignore Rule 702's use of the phrase "scientific . . . knowledge" and argue that the only inquiries required under Rule 702 are (1) whether specialized knowledge will assist the trier of fact, and (2) whether the witness is qualified as an expert in the specialized field. Pet. Br. at 30-31. This failure to come to grips with the language of Rule 702 is fatal to petitioners' argument. Petitioners' position is essentially that the Rules require the admission of expert "scientific" testimony without any inquiry into whether the underlying propositions are scientific. This interpretation would simply read the statutory language "scientific . . . knowledge" out of Rule 702.

Petitioners' position is inconsistent not only with the language of Rule 702, but also with the purpose and structure of the Rules and their common law background. As shown below, both the structure and the common law background of the Rules confirm that the general acceptance standard is the appropriate means for distinguishing "scientific . . . knowledge" from "scientific" speculation or or conjecture.

B. The Structure of the Federal Rules Confirm that Rule 702 Requires A Screening Mechanism

Rule 702's requirement that expert testimony be grounded in "scientific . . . knowledge" is not surprising

---

[8] *See generally* M. Russell Wehr, *et al.*, *Physics of the Atom* (4th ed. 1984); Samuel Glasstone, *Sourcebook on Atomic Energy* (3d ed. 1979).

[9] *See* Andrew J. Pollack, *Cold Fusion, Derided in U.S., Is Hot in Japan*, N.Y. Times, Nov. 17, 1992, at C1 ("To be sure, the level of interest in cold fusion should not be exaggerated. In Japan, as in the United States, 'most scientists don't believe it,' said Makoto Okamoto, a professor at the Tokyo Institute of Technology who is working in the field.").

given the structure of the Rules. Rule 702 is an exception to the hearsay rule and the rule requiring personal knowledge. Testimony about "scientific . . . knowledge" is nothing more than testimony about the views of the relevant scientific community. As one commentator has explained:

> An expert scientific witness is not admitted to testify to his or her personal beliefs and opinions; rather, the philosophy of expert testimony is that science itself is testifying through a particular expositor of a discipline. The only proper focus of an expert witness, therefore, is on the collective views of a scientific discipline as perceived by a person trained in the methods and conclusions of that discipline.

Donald Elliott, *Toward Incentive-Based Procedure: Three Approaches for Regulating Scientific Evidence*, 69 B.U. L. Rev. 487, 498-99 (1989) (hereinafter "*Incentive-Based Procedure*").

Rule 702 authorizes the expert to summarize or restate "the collective views of a scientific discipline" only because those views have achieved the status of "scientific . . . knowledge." Without Rule 702, such testimony would be inadmissible. Although Rule 402 provides that the general rule is that all relevant evidence is admissible, it qualifies this general rule with the phrase "except as otherwise provided . . . by these rules." As noted, Rules 602 and 802 provide "otherwise" when the witness lacks personal knowledge or is testifying to hearsay. Expert testimony about "scientific . . . knowledge" is necessarily testimony that consists largely of statements based on other than personal knowledge and restatements of the views of out-of-court declarants. Thus, but for Rule 702, such testimony would be inadmissible. The requirement reflected in the language of Rule 702—that the expert's testimony must be based upon "scientific . . . knowledge"—provides the reliability safeguard that justifies admission of such testimony into evidence as an exception to the general rules of exclusion set forth in Rules 602 and 802.

This understanding of Rule 702 is consistent with other provisions of the Rules that serve a similar function. In particular, the Rules provide for several alternative means of supplying "scientific . . . knowledge" to assist the trier of fact, each of which requires a showing of reliability as a prerequisite to its use. In addition, Rule 703, which facilitates the admission of expert opinion testimony authorized generally by Rule 702, also imposes a reliability requirement.

1. Rule 702 Must Be Read *In Pari Materia* with Rules 803(18) and 201

As the Advisory Committee Notes explain: "An intelligent evaluation of facts is often difficult or impossible without the application of some scientific, technical, or other specialized knowledge. The most common source of this knowledge is the expert witness, although there are other techniques for supplying it." Fed. R. Evid. 702 advisory committee's notes. The only "other techniques" available under the Rules for supplying "scientific, technical, or other specialized knowledge" are the learned treatise exception to the hearsay rule under Rule 803(18) and judicial notice under Rule 201. These techniques require that the proponent establish that the scientific knowledge in question be set forth in "a reliable authority," Fed. R. Evid. 803(18), or be "one not subject to reasonable dispute." Fed. R. Evid. 201.

The first of these methods is the learned treatise exception to the hearsay rule. Rule 803(18) provides an exception for the following:

> To the extent called to the attention of an expert witness upon cross-examination or relied upon by the expert witness in direct examination, statements contained in published treatises, periodicals, or pamphlets on a subject of history, medicine, or other science or art, established as a reliable authority by the testimony or admission of the witness or by other expert testimony or by judicial notice. If admitted, the statements may be read into evidence but may not be received as exhibits.

Fed. R. Evid. 803(18). By its terms, the Rule authorizes the admission of "statements contained in published treatises, periodicals, or pamphlets on a subject of . . . science" only if such "treatises, periodicals, or pamphlets" are (1) "published," and (2) "established as a reliable authority."

The publication requirement significantly enhances the general reliability of sources of scientific knowledge. As the Advisory Committee Notes recognize, "a high standard of accuracy is engendered [in the case of a learned treatise] by various factors: the treatise is written primarily and impartially for professionals, subject to scrutiny and exposure for inaccuracy with the reputation of the writer at stake." Fed. R. Evid. 803(18) advisory committee notes. The second requirement, that the treatise in question be "established as a reliable authority," provides an additional and case-specific assurance of reliability. This requirement calls upon the judge to make a preliminary determination either based on the testimony of experts in the field or by judicial notice.

The second method for supplying "scientific . . . knowledge" in a case is by means of judicial notice. Judicial notice of "adjudicative facts" is permitted if such facts are "not subject to reasonable dispute" in that they are "generally known" or are "capable of accurate and ready determination." Fed. R. Evid. 201. The Advisory Committee Notes state that while "[t]he usual method of establishing adjudicative facts is through the introduction of evidence, ordinarily consisting of the testimony of witnesses," "[i]f particular facts are outside of reasonable controversy, this process is dispensed with as unnecessary. *A high degree of indisputability is the essential prerequisite.*" Fed. R. Evid. 201 advisory committee notes (emphasis added). Hence, scientific propositions not subject to reasonable dispute—such as the law of gravity—may be the subject of judicial notice.[10]

---

[10] The only potential basis for distinguishing among the three methods

Under the Federal Rules of Evidence, testimony concerning scientific knowledge is generally inadmissible under the personal knowledge requirement and the rule against hearsay. The purpose of these rules is to exclude unreliable testimony. *See* Fed. R. Evid. 602 advisory committee's notes (the personal knowledge requirement is a " 'manifestation' of the common law insistence upon the 'most reliable sources of information' "); Fed. R. Evid. Article VIII advisory committee's notes ("The solution evolved by the common law [to the conflict between the goal of admitting only the best evidence and the necessity of admitting some hearsay] has been a general rule excluding hearsay but subject to numerous exceptions under circumstances supposed to furnish guarantees of trustworthiness.") (introductory note). Predictably, then, the exceptions to the general rule of exclusion—such as Rules 201 and 803(18)—require indicia of reliability as a prerequisite to admission.[11]

Petitioners' suggestion that the drafters of Rule 702 failed to adopt a comparable reliability standard governing the admission of "scientific . . . knowledge" when offered through expert testimony is without merit. Like Rules 201

of supplying "scientific . . . knowledge" is that propositions judicially noticed are accepted as conclusive in civil matters. Accordingly, although all three impose similar requirements it is not surprising that the standard for judicial notice is higher than the standard for the admission of "scientific . . . knowledge" through expert testimony or learned treatises. Whereas judicial notice requires "indisputability," Fed. R. Evid. 201 advisory committee's notes, the learned treatise exception requires only that the text be "established as a reliable authority," Fed. R. Evid. 803(18), and the expert testimony exception requires only that the propositions upon which such testimony rests qualify as "scientific . . . knowledge." Fed. R. Evid. 702. In the case of the latter methods, "scientific . . . knowledge" can be admitted even though some in the scientific community dispute either the reliability of the treatise or the validity of the proposition presented by the expert. All that is required is general reliability or acceptance, not indisputability.

[11] Courts make preliminary determinations regarding the applicability of exceptions to rules of exclusion under Rule 104 (a). *See Bourjaily*, 483 U.S. at 171 (applying Rule 104(a) to determine the applicability of the co-conspirator exception to the rule against hearsay).

and 803(18), Rule 702—which provides for the admission of expert testimony based on "scientific . . . knowledge"—constitutes an exception to the Federal Rules' general exclusion of testimony based upon hearsay or a lack of personal knowledge. The Notes to Rule 702 suggest that the learned treatise exception and the judicial notice mechanism are means of "supplying" "scientific . . . knowledge" in lieu of the method set forth in Rule 702. In light of the strictures of these alternative means, it is patently unreasonable to suggest—as petitioners do—that Rule 702 may be read to permit the admission of any proposition that an expert is willing to label "scientific . . . knowledge" with no comparable authority on the part of the court to make a preliminary inquiry into reliability.[12]

Rather, Rules 201, 702, and 803(18) must be read *in pari materia*. As the Reporter for the Advisory Committee that drafted the Rules, Edward W. Cleary, has stated:

> Familiar doctrine requires that statutes be read as a whole. Similarly as to the Rules, which must not be read separately and in isolation but as a part of an entire system, with due regard to its plan and organization and to the contents of rules other than the particular one under consideration.

Edward W. Cleary, *Preliminary Notes on Reading the Rules of Evidence*, 57 Neb. L. Rev. 908, 917 (1978) (footnote omitted).[13] Both the learned treatise exception and judicial notice rule dispense with the requirements of per-

[12] It is important to stress that the preliminary inquiry into reliability embodied in Rule 702's "scientific . . . knowledge" requirement relates only to the scientific propositions and methodologies utilized by experts in forming case-specific opinions and conclusions, not to the opinions and conclusions themselves. Thus, it is the scientific propositions and methodologies underlying an expert's opinion, not the opinion itself, that must be generally accepted within the scientific community. *Cf. Barefoot v. Estelle*, 463 U.S. 880 (1983) (upholding admission of experts' case-specific psychiatric predictions against constitutional challenge to their reliability).

[13] This Court quoted this article approvingly in its unanimous decision in *United States v. Abel*, 469 U.S. 45, 51-52 (1984).

sonal knowledge and in-court statements.[14] Rule 702 is an alternative means of avoiding these same requirements. Under Rule 702, "a witness qualified as an expert" is permitted to testify concerning helpful "scientific, technical, or other specialized knowledge" notwithstanding the general rule against hearsay and the rule requiring personal knowledge.

Whether "scientific . . . knowledge" is admitted via judicial notice, expert testimony, or a learned treatise, generally such knowledge remains hearsay and is based on other than personal knowledge. Thus, it is to be expected that all three methods of introducing otherwise inadmissible evidence would require similar assurances of trustworthiness before an exception would be made admitting such evidence.[15]

2. Rule 702 Must Be Read *In Pari Materia* With Rule 703

As discussed, Rule 702 provides an exception to the general rules of exclusion and thus permits an expert to testify about propositions of "scientific . . . knowledge . . . in the form of an opinion or otherwise." Fed. R. Evid. 702. The meaning of the phrase "in the form of an opinion or otherwise" is explained by the Advisory Committee Notes to Rule 702. According to the Notes, an expert's testimony about "scientific . . . knowledge" may take one

[14] It has been suggested that the functions of the hearsay and personal knowledge requirements are largely interchangeable. *See* Maguire, *Evidence: Common Sense and Common Law* 23-27 (1947).

[15] This conclusion is supported not only by the specific exception to the hearsay rule for learned treatises, but also by the fact that all exceptions to the hearsay rule are based on the presence of substitute indicia of reliability. Fed. R. Evid. Article VIII advisory committee's introductory notes ("The solution evolved by the common law has been a general rule excluding hearsay but subject to numerous exceptions under circumstances supposed to furnish guarantees of trustworthiness."). *See* Fed. R. Evid. 803(24), 804(b)(5) (setting forth catch-all exceptions to the hearsay rule for statements "not specifically covered by any of the foregoing exceptions but having equivalent circumstantial guarantees of trustworthiness").

of two forms. First, Rule 702 authorizes an expert to give "a dissertation or exposition of scientific or other principles relevant to the case, leaving the trier of fact to apply them to the facts." Fed. R. Evid. 702 advisory committee's notes (hereinafter "dissertation" testimony). Second, Rule 702 makes it possible for an expert to give an opinion "suggesting the inference which should be drawn from applying the specialized knowledge to the facts." *Id.* (hereinafter "opinion" or "application" testimony).[16]

This second or "opinion" type of testimony, however, is not automatically admissible by virtue of Rule 702 alone. Although Rule 702 removes any hearsay or personal knowledge objection to the expert's use of, or reference to, general propositions of "scientific . . . knowledge" in rendering an opinion, additional rules (Rules 703 through 705) are necessary to remove remaining barriers to the admission of such opinion testimony. As the Advisory Committee Notes explain:

> The use of opinions is not abolished by the rule, however. It will continue to be permissible for the experts to take the further step of suggesting

[16] As used in Rule 702, the term "opinion" refers to the inference to be drawn from the *application* of scientific or other specialized knowledge to the facts of the case:

> Most of the literature assumes that experts testify only in the form of opinions. The assumption is logically unfounded. The rule accordingly recognizes that an expert on the stand may give a dissertation or exposition of scientific or other principles relevant to the case, leaving the trier of fact to apply them to the facts. . . . [I]t seems wise to recognize that opinions are not indispensable and to encourage the use of expert testimony in non-opinion form when counsel believes the trier can itself draw the requisite inference. The use of *opinions* is not abolished by the rule, however. It will continue to be permissible for the experts to take the further step of suggesting the inference which should be drawn from *applying* the specialized knowledge to the facts. See Rules 703 to 705.

Fed. R. Evid. 702 advisory committee's note (emphasis added).

> the inference which should be drawn from applying the specialized knowledge to the facts. See Rules 703 to 705.

Fed. R. Evid. 702 advisory committee's note.

Rule 703 provides that the facts or data upon which an expert bases an opinion or inference need not be admissible in evidence "[i]f of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." Rule 704 generally eliminates the objection to the introduction of opinion testimony that "embraces an ultimate issue to be decided by the trier of fact." Rule 705 authorizes an expert to "testify in terms of an opinion or inference and give reasons therefor without prior disclosure of the underlying facts or data."

Rule 703 is of particular relevance to the question before the Court. By authorizing a hearsay exception for the specific facts underlying the expert's opinion only "[i]f of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject," Rule 703 imposes a reliability requirement analogous to those imposed by Rules 201, 702, and 803(18). The latter rules make it possible for an expert to recite or rely upon general propositions of "scientific . . . knowledge" that would otherwise be inadmissible. Rule 703 supplements the exception contained in Rule 702 by providing a further exception for case-specific facts or data upon which the expert must also rely when giving a case-specific opinion.

Thus, when read together, Rules 702 and 703 permit an expert to render an opinion based both upon general propositions of "scientific . . . knowledge" and upon facts or data specific to the case.[17] It is patently unreasonable

[17] Petitioners rely on this Court's decision in *Barefoot v. Estelle*, 463 U.S. 880 (1983)—upholding the admission of expert opinions regarding future dangerousness—for the proposition that the "ultimate safeguard" is not the exclusion of such opinion testimony, but rather admission of the testimony subject to vigorous cross-examination and rebuttal. Pet. Br. at 39-40. Petitioners misread this Court's decision in *Barefoot*. In *Barefoot*, the Court rejected a *constitutional* challenge to the admission of expert opinions that concluded that the defendant "would probably commit further acts of violence and represent a continuing threat to society." 463 U.S. at 884. The defendant did not argue that the experts' conclusions were not based on "scientific . . . knowledge." Thus, the Court had no occasion to consider whether there exist generally accepted principles of psychiatry that can be applied to predict an individual's future dangerousness—the only question that would be relevant under Rule 702. Rather, the Court rejected the defendant's argument that "psychiatrists, individually and as a group, are incompetent to predict with an acceptable degree of reliability that a particular criminal will commit other crimes in the future." *Id.* at 896.

In addition, the Court rejected the defendant's alternative argument—that "psychiatrists should not be permitted to testify about future dangerousness in response to hypothetical questions and without having examined the defendant personally," *id.*—on the ground that the longstanding practice of medical professionals has been to give opinions " 'in cases where they have not themselves seen the patient, and have only heard the symptoms and particulars of his state detailed by other witnesses at the trial.' " *Id.* at 903 (quoting *Spring Co. v. Edgar*, 99 U.S. 645, 657 (1879)). Thus, although the Court's holding was not based explicitly on Rule 703, the Court's holding was consistent with that Rule. *See id.* at 904.

to suggest that although Rule 703 requires that the specific facts or data upon which the expert bases his opinion be "of a type reasonably relied upon by experts in the particular field," Rule 702 permits the expert to base that same opinion on general scientific propositions that have not been accepted in the field. Thus, Rules 702 and 703 must be read as part of a coherent whole, requiring similar indicia of reliability before an expert will be permitted to give an opinion based on either the facts specific to the case or the general scientific propositions applicable to those facts.

C. The Common Law Background Supports Respondent's Interpretation of Rule 702

As this Court stressed in *United States v. Abel*, 469 U.S. 45 (1984), the Federal Rules of Evidence must be read in light of the common law principles in existence prior to the adoption of the Rules. In *Abel*, the Court held that the Rules continue to permit the longstanding common law

practice of impeachment for bias. In so holding, the Court noted:

> In principle, under the Federal Rules no common law of evidence remains. "All relevant evidence is admissible, except as otherwise provided. . . ." In reality, of course, the body of common law knowledge continues to exist, though in the somewhat altered form of a source of guidance in the exercise of delegated powers.

Abel, 469 U.S. at 51-52 (quoting Cleary, *Preliminary Notes*, 57 Neb. L. Rev. at 915 (1978) (footnote omitted)). Accordingly, although the Rules are silent on the question, the Court in *Abel* concluded, "we think it unlikely that they [the drafters of the Federal Rules of Evidence] intended to scuttle entirely" the evidentiary doctrine of impeachment for bias that was "in accord with the overwhelming state of authority" at the time the Rules were drafted. *Id.* at 50.

It is even more unlikely that the drafters of the Rules intended to eliminate the widely-recognized requirement that expert scientific testimony must be based upon propositions generally accepted within the scientific community. As petitioners concede, the general acceptance requirement has been in "exist[ence] for half a century prior to enactment of the Rules." Pet. Br. at 19. By requiring that scientific testimony be based on a "scientific principle . . . sufficiently established to have gained general acceptance in the particular field in which it belongs," the judge-made rule announced in *Frye* had both the purpose and effect of ensuring that scientific testimony would be based solely on "scientific . . . knowledge." In addition, unlike the evidentiary rule in *Abel*, the general acceptance requirement has support in the language of the Rules themselves. The drafters' use of the phrase "scientific . . . knowledge" in Rule 702 persuasively demonstrates that they did not intend to abandon the common law limitation on scientific testimony.[18]

[18] Petitioners attempt to draw a distinction between common law rules of "*inclusion*" and "*exclusion*," and suggest that *Abel* rests upon this distinction. Pet. Br. at 24 n.49. Specifically, petitioners assert that Rule 402 creates "a presumption of admissibility," and that "Rule 402 demonstrates that unless Congress preserved or authorized a common-law *exclusion* doctrine in *a specific Rule*, the doctrine cannot be used to exclude evidence." *Id.* Petitioners misperceive the nature of Rule 702. That Rule is not a rule of *exclusion*, but, as previously explained, is an *exception* to rules of exclusion set forth in Rules 602 and 802—the rule against hearsay and the rule requiring personal knowledge, respectively. Therefore, respondent need not, as petitioners suggest, establish that Rule 702 *excludes* the expert testimony proffered by petitioners. Rather, the burden is on the petitioners to demonstrate that the testimony they wish to introduce falls within Rule 702's limited exception to the general rules excluding such testimony. Petitioners have made no attempt to meet this burden.

It is unlikely that the drafters of the Rules would have effected such a radical departure from this common law practice without some mention. The silence on this point stands in marked contrast to the clear announcements made by the drafters when the Rules adopt evidentiary principles that change accepted common law practice. *See, e.g.*, Fed. R. Evid. 408 advisory committee's notes (noting that Rule 408 expands common law rule to exclude not only offers of compromise themselves but also "evidence of conduct or statements made in compromise negotiations"); Fed. R. Evid. 601 advisory committee's notes (noting that Rule 601 eliminates common law rules of incompetency such as "religious belief, conviction of crime, and connection with the litigation as a party or interested person or spouse of a party or interested person").

II. RULE 702 REQUIRES SCREENING OF UNDERLYING SCIENTIFIC PROPOSITIONS RATHER THAN SCREENING OF CONCLUSIONS DERIVED FROM THE APPLICATION OF THOSE PROPOSITIONS

Although the "scientific . . . knowledge" standard of Rule 702 means that the expert's testimony must proceed from propositions or methodologies generally accepted within the scientific community, it does not mean that the expert's *conclusions* must themselves be generally accepted within the scientific community. This fallacy underlies much

of the argumentation set forth in the petitioners' brief and in those of their supporting *amicii*. *See* Pet. Br. at 32.

A. The Ninth Circuit Correctly Applied a Bright-Line Rule in the Case Below

In affirming the district court's exclusion of petitioners' expert testimony, the Ninth Circuit did not hold that the conclusion reached by the expert was inadmissible. Rather, the court correctly focused on whether the methodology underlying the experts' testimony had been accepted within the scientific community. As the court below stated: "For expert opinion based on a given scientific methodology to be admissible, the methodology cannot diverge significantly from the procedures accepted by recognized authorities in the field." *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 951 F.2d 1128, 1130 (9th Cir. 1991); Joint Appendix ("J.A.") at 239. In this case, the court concluded that the methodology underlying the experts' testimony diverged from accepted methodology.

While recognizing that, if properly conducted, the scientific technique in issue—reanalysis of epidemiological studies—is accepted within the scientific community, the court found that the reanalysis undertaken by petitioners' expert in this case did not comply with the necessary safeguards. The scientific community holds that an integral part of any acceptable reanalysis is publication and peer review. *See id.* at 1131; J.A. at 240 (citing Michael Dore, *A Commentary on the Use of Epidemiological Evidence in Demonstrating Cause-in-Fact*, 7 Harv. Envtl. L. Rev. 429, 438-39 (1983)). Accordingly, the court found that reanalysis is generally accepted "only when it is subjected to verification and scrutiny by others in the field." *Id.* Because the reanalysis performed by petitioners' expert did not follow this method, the court found that the expert's opinion did not fall within the exception for testimony based on accepted scientific techniques.

Petitioners complain that the Ninth Circuit's requirement that their experts comply with accepted scientific methodologies constituted an improper delegation of the

power to determine the admissibility of the experts' testimony. Pet Br. at 47-48. Far from constituting an abdication of its responsibilities under Rule 702, the Ninth Circuit's insistence upon compliance with accepted scientific techniques was necessary to enforce the "scientific . . . knowledge" requirement of that Rule. Petitioners' position is that no showing of reliability need be made at the outset because whether or not expert testimony is based on scientific knowledge goes only to the weight not to the admissibility of such testimony. Pet. Br. at 39. This argument ignores the point that expert testimony as to "scientific . . . knowledge" fails the personal knowledge and hearsay requirements of the Rules and thus is inadmissible unless it falls within the limited exception set forth in Rule 702. That Rule, like all other exceptions to the hearsay rule, requires a threshold showing of reliability before otherwise inadmissible evidence can be admitted. Neither in the courts below nor in this Court have petitioners made any attempt to justify the creation of any additional exceptions to the hearsay and personal knowledge rules that would warrant admission of their expert's testimony in this case.

B. Other Courts Have Applied a Bright-Line Rule Under Rule 702

The Ninth Circuit is not alone in insisting that expert testimony must, at a minimum, be based on generally accepted scientific theories and procedures. As the Sixth Circuit recently reaffirmed, "[f]or expert testimony to be admissible under Rule 702, . . . a qualified expert . . . [must be] testifying on a proper subject . . . *in conformity to a generally accepted explanatory theory*." *United States v. Kozminski*, 821 F.2d 1186, 1194 (6th Cir. 1987) (en banc) (emphasis in original). The application of this straight-forward test is well illustrated by the Sixth Circuit's earlier decision in *United States v. Brown*, 557 F.2d 541 (6th Cir. 1977). There, the court considered the admissibility of expert testimony offered by the government to link the defendant to the crime. The expert in *Brown* proposed to use ion micropropic analysis to opine that a hair sample found at the scene of the crime and a hair sample taken

from the defendant "were of common origin." *Id.* at 555. Although ion micropropic analysis had been accepted within the scientific community to compare samples of "metals and inorganic materials," *id.*, the use of this technique to compare organic materials (such as hair) had not been.[19] Thus, the court concluded that "the government failed to fulfill the threshold requirement of demonstrating that ion micropropic analysis is a generally accepted procedure for comparing samples of human hair." *Id.* at 557.[20]

---

[19] Although a particular scientific technique may be generally accepted for some purposes, it may not be generally accepted for others. Thus, petitioners' assertion that the FDA and the EPA rely on animal studies in assessing causation is true, but irrelevant. Pet. Br. at 5. The FDA's charge is to safeguard the population from exposure to potential risks, even if slight, not to act only when causation can be proven.

Moreover, although reliance on *in vivo* and *in vitro* animal studies may be generally accepted in the absence of human epidemiological studies to make a cross-species prediction of whether a particular substance is a human teratogen, it does not appear—nor have petitioners demonstrated—that the use of animal studies is generally accepted to contradict more reliable human studies uniformly replicating a finding to the contrary. *See In re Agent Orange Prod. Liab. Litig.*, 611 F. Supp. 1223, 1231 (E.D.N.Y. 1985) (Human epidemiological studies "are the only useful studies having any bearing on causation. All the other data supplied by the parties rests on surmise and inapposite extrapolations from animal studies. . . ."), *aff'd* 818 F.2d 187 (2d Cir. 1987), *cert. denied*, 487 U.S. 1234 (1988). For example, although a positive result from the multiple-puncture tuberculous ("TB") test is generally accepted as a means of alerting doctors to the possibility that a patient has TB, it is not generally accepted as an appropriate means of diagnosing TB in the face of a contrary indication from the more reliable intracutaneous PPD test, which is administered to confirm or refute the results of the multiple-puncture test. *See* 1 *Harrison's Principles of Internal Medicine* 642 (12th ed. 1991) (multiple-puncture tests "can be recommended only as screening tests, and positive tests should be repeated using intracutaneous PPD").

[20] The court was careful to note that conflicting "conclusions drawn by experts, so long as they are based on generally accepted and reliable scientific principle," are ordinarily admissible. *Id.* at 556. Thus, the court suggested that had the expert employed the generally accepted neutron activation analysis to conclude that the hair samples were of common origin, the expert's testimony would have been admissible. *Id.* at 557-58.

The Eighth Circuit has also applied this bright-line test. In *United States v. Two Bulls*, 918 F.2d 56 (8th Cir. 1990), the court vacated and remanded a conviction based in part on expert testimony employing deoxyribonucleic acid ("DNA") profiling to link the defendant to a crime. Although the court observed that the theory underlying DNA profiling was generally accepted within the scientific community, it found that the district court erred in failing to determine whether there was agreement within the scientific community concerning the proper methods for conducting DNA profiling and whether such methods were employed in this case.

Significantly, the court found that Rule 702 and the common law *Frye* test imposed essentially interchangeable requirements, noting that "both require the same general approach to the admissibility of new scientific evidence. Neither rule should permit speculative and conjectural testing which fails normal foundational requirements necessary for the admissibility of scientific testimony or opinion." *Id.* at 60. Accordingly, the court remanded the case for the district court with instructions to hold an expanded pretrial hearing to inquire into these matters prior to admitting the expert's testimony. *Id.* at 61.

Subsequently, in *United States v. Jakobetz*, 955 F.2d 786 (2d Cir.), *cert. denied*, 113 S. Ct. 104 (1992), the Second Circuit affirmed a conviction that rested in part on the introduction of DNA profile evidence. Although the district court stated that it was applying the Second Circuit's earlier modification of the *Frye* test, the Second Circuit noted that the lower court's analysis would satisfy both the *Frye* test and the *Two Bulls* standard. *Id.* at 799. Specifically, the district court found that "the general theories of genetics which support DNA profiling are unanimously accepted within the scientific community," that "the specific techniques used by the FBI . . . are commonly used by scientists in microbiology and genetics research," and that "the FBI had adhered to strict scientific protocol in their testing of the DNA samples in this case." *Id.* at 798-99 (citations omitted).

III. FAILURE TO APPLY RULE 702's SCREENING REQUIREMENT THREATENS TO UNDERMINE THE INSURANCE MECHANISM

If this Court fails to enforce the "scientific . . . knowledge" requirement of Rule 702, several adverse consequences could follow. First, insurers could be held liable under existing policies for risks they did not assume and for which no premium was collected. This, in turn, could undermine their financial condition and hamper their ability to serve the on-going insurance needs of millions of individuals and businesses. Second, failure to enforce Rule 702's "scientific . . . knowledge" requirement, combined with speculative damage theories will create uncertainty in underwriting prospective policies covering future occurrences. As a result, insurance could become more expensive and less available to many businesses.

A. Abandonment of Rule 702's Screening Mechanism Would Result in Unanticipated Losses which Could Adversely Affect Insurers' Financial Condition

Liability insurance provides policyholders with protection against third party claims or suits. Even if a claim or suit is unsuccessful, the insurance company expends time and money for its investigation and defense. If the insured entity settles the claim or is held liable for damages, the insurer also makes indemnity payments consistent with the terms of the policy. Roland H. Long, 1 *The Law of Liability Insurance* § 1.01[1], at 1-2; § 1.03[4], at 1-12, 1-13 (1992).

In underwriting liability coverage, the insurer must make certain judgments regarding the riskiness of the activity to be engaged in by the insured. These judgments must include an estimate not only of the physical exposures associated with the insured's activity but also of the relevant legal exposures—*i.e.*, the likelihood that a judge or jury will find the insured liable for tort damages. Robert B. Holtom, *Underwriting: Principles & Practices* 235 (3d ed. 1987). Given changing legal standards regarding negligence and strict liability, particularly with respect to toxic

tort liability,[21] these assessments are extremely difficult to make; however, reliance on accepted scientific principles provides some guidance. For example, underwriters may now assume with some confidence that claims for traumatic cancer, where a blow or a cut is alleged to cause a cancerous growth, can be excluded from their estimation of risk. *Compare Canon Reliance Coal Co. v. Industrial Commission*, 211 P. 868 (Colo. 1922) (upholding finding that being hit with a piece of coal caused cancer), *with Tonkovich v. Department of Labor & Industries of State*, 195 P.2d 638 (Wash. 1948) (overturning a jury finding that broken foot caused cancer). If, however, policyholders are to be held liable not on the basis of "scientific . . . knowledge," but on the basis of propositions that have no foundation in generally accepted scientific truths, then the insurer can have no confidence in its underwriting judgments, either retrospectively or prospectively.

If this Court finds that Rule 702 permits the introduction of scientific testimony based on unaccepted scientific propositions, insurers will incur liability that they could not reasonably have anticipated, and which was not reflected in the premiums they charged, at the time existing coverage was underwritten. This problem is compounded by the fact that a long period of time may elapse between the time a policy is underwritten and the time a claim is made and eventually tried. For example, as this case demonstrates, an insurer who provided coverage to the manufacturer of bendectin while it was on the market from 1956 to 1983 would still be facing potential liability today,

---

[21] *See generally Liability: Perspectives and Policy* 1-16 (R. Litan & C. Winston ed., 1988) (detailing liberalization of the tort system). For example, some courts have recently imposed liability based on a plaintiff's "fear of cancer," dispensing with any requirement that the plaintiff prove actual injury or causation. *See* Elliott, *Incentive-Based Procedures*, 69 B.U. L. Rev. at 491 n.19 (noting that the Fifth Circuit "upheld an award for a plaintiff's fear of getting cancer even though there was no proof of a 'medical probability' that he would actually develop the disease.") (citing *Dartez v. Fibreboard* Corp., 765 F.2d 456, 468 (5th Cir. 1985)).

more than a decade after the original estimate of risk was made. If, in the interim, a court abandons the traditional standard upon which scientific testimony is permitted to be introduced, insurers will suffer significant unanticipated losses. Given the requirements of state rating laws and the highly competitive nature of the insurance market, companies typically will not be able to recoup these losses by increasing future premiums. *See* U.S. Dep't. of Justice, Tort Policy Working Group, *An Update on the Liability Crisis*, app. at 11 (1987) (hereinafter "*DOJ Update*"). If insurers are repeatedly subject to liability for risks they did not assume, their inability to recoup the losses associated with this liability poses at least a potential threat to the financial health and stability of the insurance industry. Moreover, given premium/surplus requirements, unexpected liability could adversely affect the very ability of insurers to provide coverage in the future. *See DOJ Update* app. at 11 n. 19 ("Unless new capital can flow easily into the industry, such accumulated losses may deplete reserves and, in the presence of solvency regulation or other constraints on the ratio of premiums to reserves, contribute to a supply problem, at least in the short run.").

B. The Interplay Between a Lenient Threshold for the Admissibility of "Scientific" Testimony and Toxic Tort Damage Theories Could Overwhelm the Insurance Mechanism

This Court's enforcement of Rule 702's "scientific . . . knowledge" requirement will create some degree of predictability in the murkiest area of the nation's tort law. While the screening mechanism potentially regulates the admission of expert testimony in all tort actions, it is in the area of litigation stemming from exposure to possibly hazardous substances—commonly referred to as toxic torts—that the absence of a screening mechanism would have the most profound and harmful impact. A menu of emerging damage theories, including enhanced risk of future harm, mental anguish, immunotoxicity, and medical monitoring, is available to the toxic tort claimant. In many instances, all of these damage theories are alleged by

plaintiffs in a single action. The union of these novel damage theories with a lenient test for admissibility of questionable scientific testimony would lengthen the causal chain beyond the reach of established tort law principles and create a new class of claims and claimants.

In authorizing a novel damage theory, a legislature or a common law court makes the determination that liability is properly imposed under a particular set of circumstances. This does not mean, however, that courts should go further and permit recovery under these novel theories when the requisite elements of these causes of action cannot be proven. For example, some states now permit a cause of action for enhanced risk of future harm, which typically requires a showing that the plaintiff has been exposed to a substance that makes it more probable than not that the plaintiff will be afflicted with a certain illness in the future. *See In re Paoli R.R. Yard PCB Litigation*, 916 F.2d 829 (3d Cir. 1990), *cert. denied*, 111 S. Ct. 1584 (1991). While this cause of action certainly makes it easier for plaintiffs to recover, it still requires the plaintiff to prove a probability of causation. Under petitioners' reading of the Federal Rules, a jury would be permitted to award damages even in the absence of any evidence of causation based on accepted principles of scientific knowledge.

The interplay between the reduced threshold of admissibility of questionable scientific testimony and attenuated toxic tort theories could overwhelm the insurance mechanism. Insurance can only function where insurance companies are able to spread the cost of the risks they insure over a large number of policyholders. To do this, however, there must be some degree of certainty with which the risks can be predicted. *New Castle County v. Hartford Accident & Indemnity Co.*, 970 F.2d 1267, 1272 (3d Cir. 1992) ("insurers will only underwrite a certain, specific risk, calculable to a margin of actuarial certainty"). "Serious practical problems face insurers in handling insurance against potentially wide, open-ended liability. From an insurer's point of view it is not practical to cover, without limit, a liability that may reach catastrophic proportions,

or to fix a reasonable premium on a risk that does not lend itself to actuarial measurement or estimate." Fowler V. Harper, Fleming James, Oscar S. Gray, 4 *The Law of Torts* § 25.18C at 634 (1986).

Even if insurers were somehow able to underwrite these risks, carriers would be forced to increase premiums to take into account this new risk and to satisfy the increased number of claims. Corporate policyholders are not the ones that would ultimately bear the increased costs. The cost would be passed on to society, either through price increases on products and services or through cutbacks in other areas, such as numbers of employees. *See Amaya v. Home Ice, Fuel & Supply Co.*, 59 Cal. 2d 295, 314 (1963) (when courts impose liability, society as a whole is affected "in the form of the cost of insurance."); *Borer v. American Airlines, Inc.*, 19 Cal. 3d 441, 447 (1977) ("Realistically the burden of payment of awards . . . must be borne by the public generally in increased insurance premiums or, otherwise, in the enhanced danger that accrues from the greater number of people who may choose to go without any insurance."). Unfortunately, but inevitably, increased premiums that would follow from the union of a lenient admissibility standard with novel toxic tort damage theories would "especially hurt small and medium-sized businesses." Willmore, *In Fear of Cancerphobia*, 3 Toxics L. Rep. (BNA) 559, 563 (Sept. 28, 1988).

CONCLUSION

For the foregoing reasons, the judgment of the Ninth Circuit Court of Appeals should be affirmed.

Respectfully submitted,

Of Counsel:

CRAIG A. BERRINGTON
DEBRA T. BALLEN
JAMES L. KIMBLE
ANDREW R. JONES
AMERICAN INSURANCE ASSOCIATION
1130 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 828-7100

WILLIAM J. KILBERG*
PAUL BLANKENSTEIN
BRADFORD R. CLARK
JOHN E. GEERING
GIBSON, DUNN & CRUTCHER
1050 Connecticut Avenue, N.W.
Washington, D.C. 20036
(202) 955-8500

Attorneys for American Insurance Association as Amicus Curiae

**Counsel of Record*

APPENDIX

APPENDIX

(Federal Rules of Evidence)

Rule 104. Preliminary Questions

(a) **Questions of admissibility generally.** Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b). In making its determination it is not bound by the rules of evidence except those with respect to privileges.

Rule 201. Judicial Notice of Adjudicative Facts

(a) **Scope of rule.** This rule governs only judicial notice of adjudicative facts.

(b) **Kinds of facts.** A judicially noticed fact must be one not subject to reasonable dispute in that it is either (1) generally known within the territorial jurisdiction of the trial court or (2) capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned.

(c) **When discretionary.** A court may take judicial notice, whether requested or not.

(d) **When mandatory.** A court shall take judicial notice if requested by a party and supplied with the necessary information.

(e) **Opportunity to be heard.** A party is entitled upon timely request to an opportunity to be heard as to the propriety of taking judicial notice and the tenor of the matter noticed. In the absence of prior notification, the request may be made after judicial notice has been taken.

(f) **Time of taking notice.** Judicial notice may be taken at any stage of the proceeding.

(g) **Instructing jury.** In a civil action or proceeding, the court shall instruct the jury to accept as conclusive any fact judicially noticed. In a criminal case, the court shall

instruct the jury that it may, but is not required to, accept as conclusive any fact judicially noticed.

Rule 402. Relevant Evidence Generally Admissible; Irrelevant Evidence Inadmissible

All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible.

Rule 602. Lack of Personal Knowledge

A witness may not testify to a matter unless evidence is introduced sufficient to support a finding that the witness has personal knowledge of the matter. Evidence to prove personal knowledge may, but need not, consist of the witness' own testimony. This rule is subject to the provisions of rule 703, relating to opinion testimony by expert witnesses.

Rule 702. Testimony by Experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

Rule 703. Bases of Opinion Testimony by Experts

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

Rule 704. Opinion on Ultimate Issue

(a) Except as provided in subdivision (b), testimony in the form of an opinion or inference otherwise admissible

is not objectionable because it embraces an ultimate issue to be decided by the trier of fact.

(b) No expert witness testifying with respect to the mental state or condition of a defendant in a criminal case may state an opinion or inference as to whether the defendant did or did not have the mental state or condition constituting an element of the crime charged or of a defense thereto. Such ultimate issues are matters for the trier of fact alone.

Rule 705. Disclosure of Facts or Data Underlying Expert Opinion

The expert may testify in terms of opinion or inference and give reasons therefor without prior disclosure of the underlying facts or data, unless the court requires otherwise. The expert may in any event be required to disclose the underlying facts or data on cross-examination.

Rule 802. Hearsay Rule

Hearsay is not admissible except as provided by these rules or by other rules prescribed by the Supreme Court pursuant to statutory authority or by Act of Congress.

Rule 803. Hearsay Exceptions; Availability of Declarant Immaterial

The following are not excluded by the hearsay rule, even though the declarant is available as a witness:

. . .

(18) **Learned treatises.** To the extent called to the attention of an expert witness upon cross-examination or relied upon by the expert witness in direct examination, statements contained in published treatises, periodicals, or pamphlets on a subject of history, medicine, or other science or art, established as a reliable authority by the testimony or admission of the witness or by other expert testimony or by judicial notice. If admitted, the statements may be read into evidence but may not be received as exhibits.

. . .

(24) **Other exceptions.** A statement not specifically covered by any of the foregoing exceptions but having equivalent circumstantial guarantees of trustworthiness, if the court determines that (A) the statement is offered as evidence of a material fact; (B) the statement is more probative on the point for which it is offered than any other evidence which the proponent can procure through reasonable efforts; and (C) the general purposes of these rules and the interests of justice will best be served by admission of the statement into evidence. However, a statement may not be admitted under this exception unless the proponent of it makes known to the adverse party sufficiently in advance of the trial or hearing to provide the adverse party with a fair opportunity to prepare to meet it, the proponent's intention to offer the statement and the particulars of it, including the name and address of the declarant.

Rule 804: Hearsay Exceptions; Declarant Unavailable

. . .

(b) **Hearsay exceptions.** The following are not excluded by the hearsay rule if the declarant is unavailable as a witness:

. . .

(5) **Other exceptions.** A statement not specifically covered by any of the foregoing exceptions but having equivalent circumstantial guarantees of trustworthiness, if the court determines that (A) the statement is offered as evidence of a material fact; (B) the statement is more probative on the point for which it is offered than any other evidence which the proponent can procure through reasonable efforts; and (C) the general purposes of these rules and the interests of justice will best be served by admission of the statement into evidence. However, a statement may not be admitted under this exception unless the proponent of it makes known to the adverse party sufficiently in advance of the trial or hearing to provide the adverse

party with a fair opportunity to prepare to meet it, the proponent's intention to offer the statement and the particulars of it, including the name and address of the declarant.